

CAREX BALTZELLII (CYPERACEAE) NEW TO
MISSISSIPPI WITH NOTES ON CAREX PICTA
AND CAREX IMPRESSINERVIA IN MISSISSIPPI

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ABSTRACT

Carex baltzellii was discovered for the first time in Mississippi from Marion County. The southwestern range limit of *C. picta* was extended by its discovery in Marion and Pearl River counties, Mississippi. *Carex impressinervia* was relocated in Forrest and Marion counties, Mississippi. Habitat information was acquired for each species.

INTRODUCTION

The records reported herein are from mesic ravines along minor streams in southern Mississippi. These ravines are in the Longleaf Pine Belt of the East Gulf Coastal Plain Region of the southern portion of Mississippi (Lowe 1921). The ravines are composed of relatively open, predominantly hardwood forests along small streams. The hilltops above these ravines support a dry *Pinus*, *Quercus*, and *Carya* forest with shrub species including *Cornus*, *Ilex*, and *Vaccinium*.

The Ragland Hills area of Forrest and Perry counties and the Devil's Backbone area of Marion and Pearl River counties, Mississippi include some of the most rugged terrain and unusual flora of southern Mississippi. Although a part of the Longleaf Pine Belt of Mississippi, these areas include an unusual diversity of swamps, sandhills, bottomland hardwoods, and upland forests of pines, mixed pine-hardwoods, and hardwoods. Of special interest to many botanists are the beech-magnolia communities found within the mesic ravines, which range in elevation from approxi-

mately 150 feet on the lower slopes to about 300 feet on the uppermost crests.

The surface and near surface materials consist of Miocene-Age Harttisbury and Pascagoula clays, Plio-Pleistocene Citronelle gravel and clays, and/or Holocene clastics (Mississippi Geol. Soc. Map 1969; D. Patrick pers. comm. 1991). Soils of the ridge crests and slopes of the mesic hardwood areas are usually characterized as brown silt loams or grayish brown sandy loams (USDA 1979, 1983, and 1985).

The flora of Ragland Hills has been intensively studied (Rogers 1977), whereas that of the Devil's Backbone area is less well known. Of the 1019 species listed for the 3600 acre Ragland Hills area, 15 are considered as rare, threatened, or of special concern by the Mississippi Natural Heritage Program (Mississippi Natural Heritage Program 1987). Surveys initiated in 1989 were responsible for relocating seven of the rarer species (Rosso and McPhail 1989 and Rosso et al. 1990); however, *Carex impressinervia* Bryson, Kral, and Manhart and several others remained unobserved until the report herein (Rosso and McPhail in press).

CAREX BALTZELLII NEW TO MISSISSIPPI

For many years, *Carex baltzellii* Chapm. ex Dewey was known only from the type locality in northwestern Florida (Mackenzie 1933) and from adjacent Georgia (Mackenzie 1935). It is a rare species that is found in mesic, sandy loam ravines in the lower Coastal Plain in extreme southeastern Alabama and southwestern Georgia and in the Appalachian and Chattahoochee River areas of northwestern Florida (Kral 1983). According to Kral, *C. baltzellii* is always found on moist, well-drained, humified sandy soils in steep ravines. It blooms in February and fruits in March and April.

While trying to relocate previously known populations of *C. impressinervia*, we discovered *C. baltzellii* on steep slopes in a narrow ravine above a small stream in Marion County, Mississippi. The plants appeared somewhat like *C. picta* Steudel but differed by their more erect habit and glaucous vesture. In contrast to the colonial structure as first described for *C. picta* by Charles C. Deam (Hermann 1940), plants did not form the typical circular tufts with hollow centers. Upon closer inspection, it was determined that the plant was not dioecious as in *C. picta* but was actually *C. baltzellii*.

Discovery of *C. baltzellii* in Mississippi extends the range of this species westward by about 375 miles. *Carex baltzellii* and *C. impressinervia* are listed among "candidates for possible addition to the List of Endangered and Threatened Plants," category 2, by the U. S. Fish and Wildlife Service (1990). Collection data for *C. baltzellii* in Mississippi are given below.

MISSISSIPPI. Marion Co.: Devil's Backbone, E of MS Hwy 43 about 17 air mi SSE of Columbia, 11 Apr 1991, C. T. Bryson 10658 & S. W. Rosso (ctb-Charles T. Bryson personal herbarium, IBE, MICH, SWSL, USM-University of Southern Mississippi); Devil's Backbone, E of MS Hwy 43 about 18 air mi SSE of Columbia, 26 Apr 1991 C. T. Bryson 10729, R. F. C. Naczi, T. E. Newton, & S. W. Rosso (ctb).

Associates on the slope with *C. baltzellii* include *Acer saccharum*, *Arisaema dracontium*, *A. quinatum*, *Aristolochia serpentaria*, *Berchemia scandens*, *Calli-carpa americana*, *Carex abscondita*, *C. digitalis* var. *asymmetrica*, *C. striatula*, *Carpinus caroliniana*, *Carya* sp., *Cornus florida*, *Dirca palustris*, *Euonymus americanus*, *Fagus grandifolia*, *Halesia diptera*, *Hexastylis arifolia*, *Ilex opaca*, *Illicium floridanum*, *Kalmia latifolia*, *Liriodendron tulipifera*, *Magnolia grandiflora*, *M. macrophylla*, *M. pyramidata*, *Quercus alba*, *Smilax* sp., *Trillium* sp., and *Viola* sp. Present downslope along the stream just below *C. baltzellii* were *Carex abscondita*, *C. atlantica* ssp. *atlantica*, *C. crebriflora*, *C. debilis*, *C. leptalea* and *C. willdenowii*. All *C. baltzellii* clumps were found on a humic, coarse sandy loam soils that were on steep slopes just above streams. Fewer than 50 clumps of *C. baltzellii* were located.

CAREX IMPRESSINERVIA IN MISSISSIPPI

Carex impressinervia was first collected in Mississippi by Ken Rogers in the Ragland Hills area in Forrest County and was identified as the closely related *C. oligocarpa* Schkuhr (Rogers 1977). At the time that *C. impressinervia* was described (Bryson *et al.* 1987), the senior author had spent several days in the field alone and with Will McDearman (MMNS) trying to relocate the population in Forrest County and find additional populations. Despite these efforts and those of Robert F. C. Naczi (MICH), the Forrest and Marion County populations were not relocated (Naczi and Bryson 1990).

In early March, 1991, Sam W. Rosso located a population of approximately 50 clumps of *C. impressinervia* in the Ragland Hills area of Forrest County. After several visits to the Devil's Backbone area in 1991, the authors found this species in steep, mesic ravines in Marion County, Mississippi. The Devil's Backbone population consists of about 200 clumps scattered along several narrow terraced ravines. The rediscovery is significant because *C. impressinervia* may well be the rarest *Carex* endemic to eastern North America. Collection data for *C. impressinervia* are given below.

MISSISSIPPI. Forrest Co.: Ragland Hills, 21 Mar 1991, S. W. Rosso 91-111 (ctb, USM); 11 Apr 1991, C. T. Bryson 10630 & S. W. Rosso (ctb, IBE, MICH). Marion Co.: Devil's Backbone, E of MS Hwy 43, ca. 18 air mi SSE of Columbia, 26 Apr 1991, C. T. Bryson 10730, R. F. C. Naczi, T. E. Newton, & S. W. Rosso (ctb, IBE, VDB).

As with the Alabama populations of *C. impressinervia* (Bryson *et al.* 1987 and Naczi and Bryson 1990), the Forrest and Marion County populations are restricted to narrow terraces at the base of slopes above small streams. In each case, these small streams were narrow enough to be crossed by a single step. Occasionally but rarely *C. impressinervia* plants were found slightly upslope and almost never along wet stream banks. The narrow microhabitat requirements of *C. impressinervia* may be one reason that it is so rare.

In Forrest County, *C. impressinervia* is most closely associated with *Fagus grandifolia*. Other woody associates include *Acer saccharum*, *Ilex opaca*, *Illicium floridanum*, *Kalmia latifolia*, *Liriodendron tulipifera*, *Magnolia grandiflora*, *M. macrophylla*, *Ostrya virginiana*, *Quercus alba*, *Rhus radicans*, *Smilax* sp. and *Vitis* sp. Unlike the Alabama sites, *C. picta* and *C. striatula* occur just above *C. impressinervia*. Additional associates immediately upslope were *Callicarpa americana*, *Cornus florida*, *Fraxinus* sp., *Mitchella repens*, *Polystichum acrostichoides*, *Stewartia malacodendron*, and *Vaccinium elliotii*. Other herbs in close proximity with *C. impressinervia* were *Aristolochia serpentaria*, *Carex laxiflora* var. *serpulata*, *Hexastylis arifolia*, and *Viola* sp. Downslope were *Carex abscondita*, *C. debilis*, *C. digitalis* var. *asymmetrica*, *Euonymus americanus*, and *Sebastiania ligustrina*. The associates for the Marion County location are similar to that of the Forrest County station with one exception. *Dirca palustris* was present in Marion County.

ADDITIONAL RECORDS OF *CAREX PICTA* IN MISSISSIPPI

Carex picta Steudel has not been previously reported from Marion and Pearl River counties in Mississippi. Apparently, these records are the southwesternmost stations for this species in Mississippi and in the United States. According to Nelwyn Gilmore McInnis of the Louisiana Heritage Program (pers. comm. Apr 1991) the type locality of *C. picta* cited as "Drummond (s.n.) Louisiana, N. Orleans" (Mackenzie 1933) is evidently inaccurate and probably refers to the herbarium where the specimen was housed or it was just a generic locality that Drummond had as his base or where he shipped specimens (A. A. Reznicek pers. comm. May 1991). Reznicek also suggested that it would be interesting to look through Drummond's itineraries to see if he traveled up the Pearl River. Such a trip might have been a logical trip from New Orleans in those days. Both theories may explain why there are other references to plants supposedly collected in southern Louisiana by early botanists that are currently unknown from the New Orleans area. The only confirmed records of *C. picta* cited in Louisiana are from the northern part of the state in Bossier and Jackson parishes (MacRoberts 1988).

Of additional significance is the fact that in Marion County *C. baltzellii*,

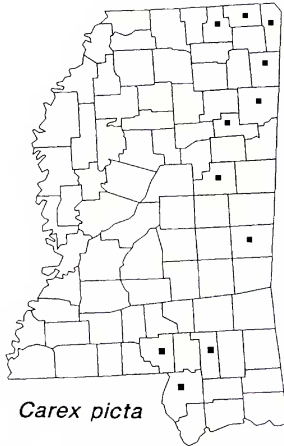


FIG. 1. Distribution of *Carex picta* in Mississippi.

C. impressinervia, and *C. picta* are found on the same bluff above a small tributary of the Pearl River. These species are not common at this locality. The microhabitats were isolated from one another by slope position and, to some degree, soil texture. *Carex impressinervia* and *C. picta* were found higher up the slopes than *C. baltzellii*. All three were growing on highly humic loam soils. However, the soil texture was a finer grain loam under the *C. picta* than the soil under *C. baltzellii*. The soil texture was even finer grain under *C. impressinervia*.

A distribution map based on examination of specimens from Mississippi (ctb, IBE, MISS, MISSA, MMNS, USM) is shown in Figure 1. The new collection data for *C. picta* in Mississippi follow.

MISSISSIPPI. Marion Co.: Devil's Backbone, E of MS Hwy 43, ca. 17 air mi SSE of Columbia, 11 Apr 1991, *C. T. Bryson 10648* & *S. W. Rosso* (ctb, IBE, MICH, SWSL); Devil's Backbone, E of MS Hwy 43, ca. 18 air mi SSE of Columbia, 26 Apr 1991, *C. T. Bryson 10726*, *R. F. C. Naczi*, *T. E. Newton*, & *S. W. Rosso* (ctb, MICH, USM). Pearl River Co.: E and W of MS Hwy 43 ca. 3 mi S of Marion-Pearl River County line, 12 Apr 1991, *C. T. Bryson 10678* (ctb, IBE, MICH); 26 Apr 1991, *C. T. Bryson 10754*, *R. F. C. Naczi*, *T. E. Newton*, & *S. W. Rosso* (ctb, MMNS).

Each population is restricted to a small area of less than 100 square feet

except the population located in Marion County on 26 Apr 1991 which covers a south-facing slope of more than 10,000 square feet. In this population there are several thousand circular to semi-circular clumps. The Pearl River County population is the smallest and consists of fewer than 30 widely scattered small clumps.

The associated species for *C. picta* were similar to those of *C. baltzellii*; however, the following species were only found upslope with *C. picta*: *Arundinaria gigantea*, *Carex digitalis* var. *macropoda*, *C. laxiflora* var. *serrulata*, *Sanicula canadensis*, *Sanguinaria canadensis*, *Uvularia grandiflora*, and *Yucca filamentosa* var. *smalliana*. The woody species most closely associated with *C. baltzellii*, *C. impressinervis*, and *C. picta* was *Fagus grandifolia*.

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